Office of Science
Notice DE-FG01-04ER04-18

Research in Innovative Approaches to Fusion Energy Sciences

Department of Energy

Office of Science Financial Assistance Program Notice DE-FG01-04ER04-18; Research in Innovative Approaches to Fusion Energy Sciences

AGENCY: U.S. Department of Energy

ACTION: Notice inviting grant applications.

SUMMARY: The Office of Fusion Energy Sciences (OFES) of the Office of Science (SC), U.S. Department of Energy (DOE), announces its interest in receiving grant applications for research in innovative approaches to fusion energy sciences. All individuals or groups planning to submit applications for renewal or new funding in Fiscal Year 2005 should submit in response to this Notice.

The OFES Innovative Confinement Concepts (ICC) Program has the long-term performance measure of demonstrating enhanced fundamental understanding of magnetic confinement and improved basis for future burning plasma experiments through research on magnetic confinement configuration optimization. The program is focused on resolving key scientific issues and determining the confinement characteristics of a range of attractive confinement configurations (See, for example, the Report of the Integrated Program Planning Activity for the DOE Fusion Energy Sciences Program (IPPA 2000), Report DOE/SC-0028, http://www.ofes.fusion.doe.gov/FusionDocuments/IPPAFinalDec00.pdf). Current emphases of the program include unraveling the physics of high density magnetized plasmas, plasmas with a high degree of self organization, and high-b plasmas. Research proposals in support of the on-going research in the program or the long-term goal of the program are welcome. Applications for research on the large fusion facilities (DIII-D, Alcator C-Mod, NSTX, MST, NCSX), or initiatives in Inertial Fusion Energy should not be submitted in response to this notice.

OFES may also solicit proposals from time to time under separate announcements of Initiatives to support coordinated, goal-directed community efforts. These Initiatives will be funded to achieve specific programmatic and scientific aims and will be subject to requirements that are different from those of this notice. Such grants, if funded, will be subject to periodic reviews of progress.

DATES: To permit timely consideration for awards in FY05, applications submitted in response to this notice must be received by DOE no later than 4:30 p.m., Eastern Time, May 25, 2004. Electronic submission of formal applications in PDF format is required. It is important that the

submission be in a single PDF file. Please see the section "Addresses" below for further instructions on the method of proposal submission.

THE DEADLINE FOR FORMAL APPLICATIONS HAS BEEN CHANGED TO JUNE 10, 2004. [Added May 5, 2004]

ADDRESSES: Formal applications referencing Program Notice DE-FG01-04ER04-18, must be sent electronically by an authorized institutional business official through DOE's Industry Interactive Procurement System (IIPS) at: http://e-center.doe.gov/. IIPS provides for the posting of solicitations and receipt of applications in a paperless environment via the Internet. In order to submit applications through IIPS, your business official will need to register at the IIPS website. **IIPS offers the option of using multiple files, please limit submissions to one volume and one file if possible, with a maximum of no more than four PDF files.** The Office of Science will include attachments as part of this notice that provide the appropriate forms in PDF fillable format that are to be submitted through IIPS. Color images should be submitted in IIPS as a separate file in PDF format and identified as such. These images should be kept to a minimum due to the limitations of reproducing them. They should be numbered and referred to in the body of the technical scientific grant application as Color image 1, Color image 2, etc. Questions regarding the operation of IIPS may be E-mailed to the IIPS Help Desk at: HelpDesk@pr.doe.gov, or you may call the help desk at: (800) 683-0751. Further information on the use of IIPS by the Office of Science is available at: http://www.sc.doe.gov/production/grants/grants.html.

If you are unable to submit an application through IIPS, please contact the Grants and Contracts Division, Office of Science at: (301) 903-5212 or (301) 903-3604, in order to gain assistance for submission through IIPS or to receive special approval and instructions on how to submit printed applications.

FOR FURTHER INFORMATION CONTACT: Office of Fusion Energy Sciences, U.S. Department of Energy, SC-55/Germantown Building, 1000 Independence Avenue, SW, Washington, DC 20585-1290. Dr. Francis Thio is the Team Leader for the ICC Program. Contact information for members of the ICC Team is given below:

Dr. Sam Barish, SC-55, (301) 903-2917, sam.barish@science.doe.gov

Dr. Curt Bolton, SC-55, (301) 903-4914, curt.bolton@science.doe.gov

Dr. Steve Eckstrand, SC-55, (301) 903-3752, steve.eckstrand@science.doe.gov.

Dr. Chuck Finfgeld, SC-55, (301) 903-3423, charles.finfgeld@science.doe.gov.

Dr. Francis Thio, SC-55, (301) 903-4678, francis.thio@science.doe.gov

SUPPLEMENTARY INFORMATION:

General information about development and submission of applications, eligibility, limitations, evaluations and selection processes, and other policies and procedures may be found in the

Application Guide for the Office of Science Financial Assistance Program and 10 CFR Part 605. Electronic access to SC's Financial Assistance Guide and required forms is possible via the Internet using the following Web site address: http://www.science.doe.gov/production/grants/grants.html. DOE is under no obligation to pay for any costs associated with the preparation or submission of an application if an award is not made.

Since we expect that reviewers will be asked to review several applications, all applications should be limited to a maximum of twenty five (25) pages (including text and figures) of technical information. Applications exceeding these page limits may be rejected without review. The PDF file may also include a few selected publications in an Appendix as background information. In addition, in the electronic submission, please limit biographical and publication information for the principal investigator and key personnel to no more than two pages each. Each principal investigator should provide an e-mail address.

The application should be written in strict compliance with the following format:

1. Executive Summary - summarize in no more than two pages

2. Abstract - One paragraph summary of the planned work in no more than one page

3. Background and Recent Accomplishments
3.1 Background
3.2 Recent Accomplishments - This subsection is mandatory for renewal applications, but optional for new applications

4. Proposed research
4.1 Detailed Plan (Scope)
4.2 Project schedules and milestones
4.3 Statement of Work and Deliverables

5. Textual Summary of Budget (in addition to the formal budget pages) - in particular, showing how the budget relates to the research and task plans

6. Management plan - if appropriate (for projects of large size and complexity)

7. Description of facilities, resources, and personnel.

8. Other current and pending support.

In addition, the information required by 10 CFR Part 605 should be conveyed by the application using the above format wherever possible.

In selecting applications for funding, the DOE Office of Fusion Energy Sciences will give priority to applications that can produce experimental results within three to five years after grant

initiation. Theoretical research will be accepted for consideration under this Notice when bundled with and in support of an experimental application.

Applications concerned with scientific assessment of new concepts or approaches that are not ready for experimental investigation should have a well-defined scope. The product of such assessment would be a clear scientific description of the concept and its operation, its physics and engineering basis, critical analysis of major difficulties to be overcome in developing the concept, and an analysis of what would be achieved by moving to experimental research.

Collaborative research projects involving more than one institution are encouraged. Applications submitted from different institutions, which are directed at a common research activity, should clearly indicate they are part of a proposed collaboration and contain a brief description of the overall research project. However, each application must have a distinct scope of work and a qualified principal investigator, who is responsible for the research effort being performed at his or her institution. Synergistic collaborations with researchers in federal laboratories and Federally Funded Research and Development Centers (FFRDCs), including the DOE National Laboratories are also encouraged, though no funds will be provided to these organizations under this Notice. Further information on preparation of collaborative applications may be accessed via the Internet at: http://www.science.doe.gov/production/grants/Colab.html.

Program Funding

There are seven existing projects within the ICC Program scheduled for possible renewal in FY05 with a total funding amount of about $4,500,000 in FY04. It is anticipated that a similar amount of funding in FY05 might be available to fund renewals of existing work or new work from applications received in response to this Notice. Awards are typically made for a period of three years, with out-year support contingent on the availability of funds and satisfactory progress, though applications may request support for up to five years. OFES reserves the right not to fund any renewal or new work that is judged not to be better or equal in quality and programmatic importance to existing projects within the program. The cost-effectiveness of the application will be considered when comparing applications with differing funding requirements. Previous awards have ranged from $80,000 to $960,000. It is anticipated that award sizes may range from $50,000 to $1,500,000. The number of awards funded, and the amount of funding for each grant, will depend upon the number and quality of the applications received.

Merit Review

Applications will be subjected to formal merit review and will be evaluated against the following criteria, which are listed in descending order of importance as set forth in 10 CFR Part 605. (http://www.science.doe.gov/production/grants/605index.html). Included with each criteria are the detailed questions that are asked of the reviewers.

1. Scientific and/or technical merit of the project;

- Does this application address an important problem in fusion energy science?

- How does the proposed research compare with other research in its field, both in terms of scientific and/or technical merit and originality?
- What is the likelihood that it will lead to new or fundamental advances in its field?

2. Appropriateness of the proposed method or approach;

- Are the conceptual framework, methods, and analyses adequately developed and likely to lead to scientifically valid conclusions?
- Are there significant potential problems and how well does the applicant address these problems?

3. Competency of the applicant's personnel and adequacy of the proposed resources;

- How well qualified are the applicant's personnel to carry out the proposed research? (If appropriate, please comment on the scientific reputation and quality of recent research by the principal investigator and other key personnel.)
- Are the applicant's research environment and resources adequate?
- Does the proposed work take advantage of unique facilities and capabilities and/or make good use of collaborative arrangements?

4. Reasonableness and appropriateness of the proposed budget.

The reviewers are also asked to comment on **Other Appropriate Factors**:

- How is the proposed project relevant to the Office of Fusion Energy Science's goals?
- Could the proposed research make a significant contribution to another field?
- Is there potential for spin-offs?
- If applicable, please comment on the educational benefits of the proposed activity.

The Office of Fusion Energy Sciences will also consider, as part of the evaluation, other available advice or information as well as program policy factors such as ensuring an appropriate balance among the program areas and within the program areas, coupling to the theory and computational efforts, and quality of previous performance. Selection of applications/proposals for award will be based upon the findings of the technical evaluations, the importance and relevance of the proposed research to the Office of Fusion Energy Sciences' mission, and funding availability. Funding under this Notice is limited to supporting research activities based in the U.S., though subcontracts with limited funding for collaborators outside the U.S. may be allowed with appropriate justifications.

The Catalog of Federal Domestic Assistance number for this program is 81.049, and the solicitation control number is ERFAP 10 CFR Part 605.

Martin Rubinstein
Acting Director
Grants and Contracts Division
Office of Science

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